WHAT IS CLAIMED IS:

1. A particulate manganese dioxide having micropores and meso-macropores, said manganese dioxide having simultaneously a BET surface area between about 20 and 31 m^2/g, a micropore area between about 8 and 13 m^2/g and an average meso-macro pore radius greater than 32 Angstom.

2. The manganese dioxide of claim 1 wherein said manganese dioxide is in particulate form and said micropores and meso-macro pores are intraparticle pores and the total porosity of said manganese dioxide, based on pores within the manganese dioxide, is between 0.035 cm^3/g and 0.050 cm^3/g.

3. The manganese dioxide of claim 2 wherein the manganese particles have an average diameter between about 1 and 100 micron.

4. The manganese dioxide of claim 1 wherein said manganese dioxide is an electrolytic manganese dioxide.

5. The manganese dioxide of claim 2 wherein the micropores are intraparticle pores having a diameter less than or equal to 20 Angstrom and the meso-macropores are pores having a diameter greater than 20 Angstrom.

6. A particulate electrolytic manganese dioxide product having micropores and meso-macropores, said manganese dioxide having simultaneously a BET surface area between about 20 and 28 m^2/g and a micropore area between 8 and 13 m^2/g, and an average meso-macropore radius greater than about 32 Angstrom, with the total porosity, based on pores within the manganese dioxide, being between about 0.035 cm^3/g and 0.040 cm^3/g.

7. The manganese dioxide of claim 6. wherein said manganese dioxide is in particulate form and said micropores and meso-macro pores are intraparticle pores.

8. The electrolytic manganese dioxide of claim 7 wherein the manganese dioxide product is in particulate form having an average particle diameter between about 1 and 100 micron.

9. The manganese dioxide of claim 7 wherein the micropores are intraparticle pores having a diameter less than or equal to 20 Angstrom and the meso-macropores are pores having a diameter greater than 20 Angstrom.

10. A particulate electrolytic manganese dioxide product having micropores and meso-macropores, said manganese dioxide having simultaneously a BET surface area between about 20 and 30 m^2/g and a micropore area between 8 and 13 m^2/g, and an average meso-macropore radius greater than about 32 Angstrom, with the total porosity, based on pores within the manganese dioxide, being between about 0.040 cm^3/g and 0.045 cm^3/g.

11. The manganese dioxide of claim 10 wherein the manganese dioxide is in particulate form and said micropores and meso-macro pores are intraparticle pores.

12. The electrolytic manganese dioxide of claim 11 wherein the manganese dioxide is in particulate form having an average particle diameter between about 1 and 100 micron.

13. The manganese dioxide of claim 11 wherein the micropores are pores having a diameter less than or equal to 20

Angstrom and the meso-macropores are pores having a diameter greater than 20 Angstrom.

14. A particulate electrolytic manganese dioxide product having micropores and meso-macropores, said manganese dioxide having simultaneously a BET surface area between about 20 and 31 m^2/g and a micropore area between 8 and 13 m^2/g, and an average meso-macropore radius greater than about 32 Angstrom, with the total porosity, based on pores within the manganese dioxide, being between about 0.045 cm^3/g and 0.050 cm^3/g.

15. The manganese dioxide of claim 14 wherein the manganese dioxide is in particulate form and said micropores and meso-macro pores are intraparticle pores.

16. The electrolytic manganese dioxide of claim 15 wherein the manganese dioxide is in particulate form having an average particle diameter between about 1 and 100 micron.

17. The manganese dioxide of claim 15 wherein the micropores are pores having a diameter less than or equal to 20 Angstrom and the meso-macropores are pores having a diameter greater than 20 Angstrom.